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ABSTRACT

The Ohio Task Force on High Technology (TFHT) was formed in 1982 to make recommendations in four areas: (1) the development of future scenarios for Ohio; (2) human resource development of providers and consumers of postsecondary educational services; (3) equipment and capital plan expenditures; and (4) implications of high technology for academic program development, approval, and evaluation. Through a series of meetings and creation of working papers and models, the TFHT developed 11 recommendations under these four goal areas. In general, the committee noted that the United States is experiencing the onset of a transformation from an industrialized to a technical society based on information. For Ohio, this trend will mean the loss of jobs unless the postsecondary establishment, in concert with other parts of society, accepts a commitment to strategic planning and management. Collection and analysis of data should begin with the Ohio Board of Regents undertaking an analysis of strengths, weaknesses, and opportunities in order to clarify the role of technical education in economic development. From there, a multi-year action plan could be derived. The commitment to strategic planning and management should be paralleled by a commitment to human resource development. With regard to capital planning, additional money is required to support high technological equipment, and program development must be synchronized with such equipment purchase. In the area of program development and review, more emphasis should be placed on the requirements of high technology programs and the development of more innovative programs. Pulling together these four aspects of the educational process should result in a better system for Ohio to meet the challenges of an information-oriented technical society in the years to come. (A summary of recommendations is attached.) (KC)

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STRATEGIC PLANNING FOR ECONOMIC DEVELOPMENT

by

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During the summer of 1982, Dr. Edward Q. Moulton, Chancellor of the Ohio Board of Regents, appointed an Advisory Committee on Two-Year Campus Academic Affairs. At its first meeting on September 2, Chancellor Moulton discussed the role of the Academic Advisory Committee. One role of the committee is to assess the need for high technology programs and to recommend the location of specific programs at selected institutions with unique facilities and resources so that these programs serve a region of the state with participation in such programs through a consortial arrangement. A Task Force on High Technology was created to provide direction to this compelling issue.

The Task Force on High Technology (TFHT) met initially on October 7, 1982, to (1) select its leadership, (2) review its charge, (3) analyze materials and (4) establish a clearinghouse for the exchange of materials. The charge to the TFHT is as follows:

> The Task Force will examine the issues relative to the development of high technologies and will recommend policies the Regents should consider adopting in this area.

The TFHT analyzed materials and discussed areas of focus such as (1) developing scenarios and visions of the future, (2) Research and Development expenditures, (3) economic data by industry, (4) Federal and state legislation and models, (5) an inventory of state resources, (6) the human side of reindustrialization, and (7) alternative delivery systems of postsecondary education services. The TFHT specified four goal areas derived from the discussion of its charge and the review of areas of focus. These four goals are (1) the development of future scenarios for Ohio; (2) human resource development of providers and consumers of postsecondary education services; (3) equipment and capital plan expenditures; and (4) implications of high technology for academic program development, approval, and evaluation.

The TFHT met monthly to conduct its business. It appointed a subgroup to define the term high technology. The TFHT adopted unanimously the following definition at its meeting on February 3, 1983:

> The term "high technology" characterizes: processes, products and applications stemming from the latest scientific and technical development; utilization of high levels of artificial or machine intelligence and information/decision capabilities; and extension of human manual and intellectual capacities through the use of computer technology and the application of sophisticated physical principles.

Activities of the TFHT are documented in detail in Working Paper #1. The document contains seven chapters and supporting appendices. In addition, seven packages of articles, documents, and models were distributed to the members. This volume of information became the raw material on which this concise report was based. The report contains eleven recommendations listed under the four goal areas of (1) scenario and role (2) human resource development, (3) capital planning, and (4) program development and review.

The United States, along with most of the industrialized nations of the world, is experiencing the onset of a transformation from an industrialized to a technical society based on information. For Ohio, it means the demise of many of the industries that characterized this nation's industrial heartland but holds the promise of new jobs and new opportunities if state and higher education leadership accepts the challenge of planning strategically. Strategic planning and management is, essentially, a process of identifying strengths and weaknesses from an analysis of data obtained from an audit of a system's internal environment and matching the results with opportunities and threats from an analysis of data obtained from an assessment of a system's external environment.

The commitment to strategic planning and management would necessitate the collection and analysis of data about (1) demographic trends, (2) social expectations, (3) economic trends, (4) governmental planning, (5) technological advances, (6) workplace changes, (7) energy requirements, and (8) value shifts. These data would be analyzed in an effort to capitalize on strengths, minimize weaknesses, take advantage of opportunities, and eliminate or reduce threats. Strengths can be listed as the Battelle Memorial Institute, the diversity of business establishments, land availability, transportation, water, and a

variety of leadership organizations. Weaknesses include state funding of education, high student fees, low participation in higher education, quality of doctoral programs, use of technology in the educational process, and commitment to intramural and intermural strategic planning. Opportunities seem evident in telecommunications, robotics, and factory automation. Threats include Ohio's decline from 34th to 44th of 48 contiguous states as an attractive manufacturing site and competition from other states and regions. (See FIGURE 1)

Therefore, it is recommended that the commitment to the new social compact be accompanied by a parallel commitment to strategic planning and management. Collection and analysis of additional data should commence as soon as possible and continue through fall of 1983. During winter and spring of 1984, the Ohio Board of Regents should undertake an analysis of strengths, weaknesses, opportunities, and threats. These two steps would pave the way for clarifying the mission and role of technical education in economic development and from which would be derived a multi-year action plan.

Because human factors account for a high percentage of increases in productivity, the commitment to strategic planning and management should be paralleled by a commitment to human resource development. This could be accomplished through (a) improvements in the Management Information System, (b) design and implementation of a program for human resource development such as "the Management of Technological Innovation Seminar Series," (c) pressing the state to make a commitment to human resource development and (d) development of a mechanism to fund continuing education for business and industry. "The Management of Technological Innovation" series of the Harvard Business Review will be of great value in this effort.

With regard to capital planning, it is apparent that additional money is required to support high technology equipment and that program development, supplemental high technology equipment requests, and capital improvement recommendations must be synchronized.

Figure 1

SWOT ANALYSIS

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
The Batelle Institute	State Funding of Education	Telecommunications	Ohio's decline from 34th (1981) to 44th of 48 contiguous states as an attrative manufacturing site.
Diversity of Business Establishments	Student Fee Assumption 1980-81 33% 1981-82 37% 1982-83 44%	NASA Lewis Research Center	- 4th highest manufacturing wage
Land Availability	Participation in Higher Educ.	Robotics	- 3rd highest time lost due to work stoppage
Transportation - Highway, Air, Rail	Quality of Doctoral Programs: Only 2 strong Ph.D. Programs 71 of 108 deteriorated over the last 5 years 71 of 109 were below average	Center for Robotics - Michigan	- 1st in expenditure in environmental control
Water	Use of Educational Technology	Robotics Institute - Carnegie Mellon	- 46th in state and local taxes
Geographic Location		Just-In-Time Manufacturing	Competition from Other States and Regions
Leadership Organizations IUC-OTCCA 7 WFS Chapters 8 ASTD Chapters		Structural Dynamics Research Corporation	
Ohio Technology Transfer Organization			
Jt. Commission of Voc-Tech Education			
Committee on Higher Education Telecommunication			
Eminent Scholars Prospect			
Ohio Council for Interinstutional Research(OCIR)			
Ohio Assn. for Staff, Program, and Org. Dev.(OASPOD)			
Ohio Assn. of Two-Year Colleges	Intramural Strategic Planning Intermural Strategic Planning		

In the area of program development and review, three items are important. First, the process of program review is currently being examined; special characteristics such as cost, location, and infrastructure requirements of high technology programs should be considered in relation to emerging needs of economic and industrial development. Second, unique characteristics of high technology programs should be included in discussions on articulation. Third, innovative delivery systems for education and training programs should be promoted and a set of specifications should be developed to deliver such programs.

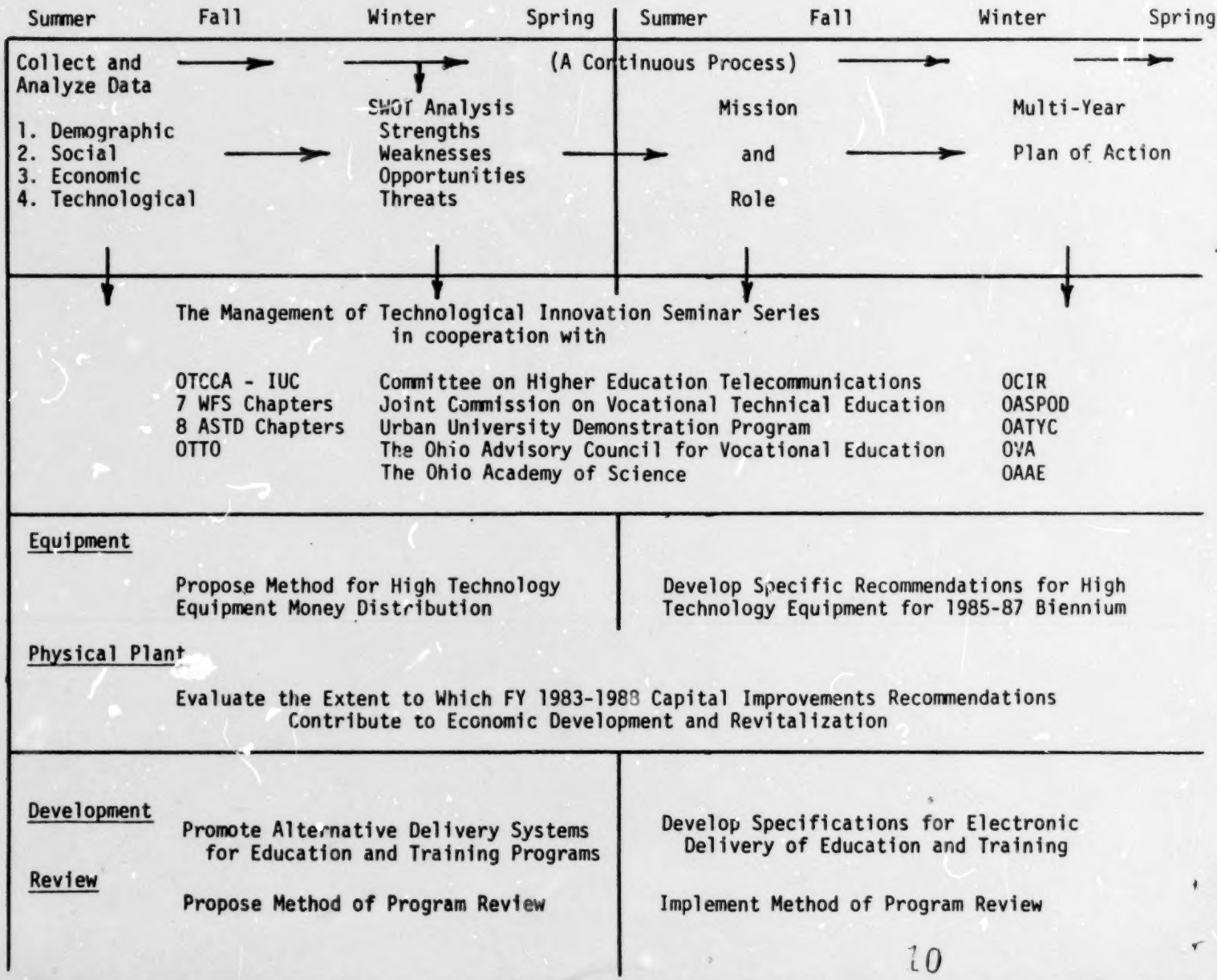
FIGURE 2 is a display of these recommendations in "A Plan of Action for the 1983-85 Biennium." A "Summary of Recommendations" is attached. What is being suggested is that postsecondary education must take a proactive leadership role in the transformation from an industrial society to an information society. In Megatrends, John Naisbitt states:

> Things are not going to get better, things are going to get different. We are not in a recession, we are in something much more profound than that. We are changing economies and we haven't changed economies for a hundred and fifty years.
>
> Of course there is a lot of uncertainty but we have got to make uncertainty our friend. We have had an economy that rested on the industrial sector, which has served us magnificently for so long, but now we are shifting to a new economy that rests on information and electronics. This is not going to happen tomorrow; it is happening today. We are more in the new economy than we are in the old economy.

Persons can conceptualize the issue from different frameworks. From the economic perspective, "putting Ohio back to work" means jobs and a solution to cash flow problems at various levels of government. A strategy might focus on the cultivation of the 75% of markets outside the United States, a commitment to economic revitalization from an international perspective. From the humanitarian perspective it means the identification of some of mankind's most serious global problems and analyzing how Ohio's resources can be applied to them. Whatever the course of action, the solution lies in a commitment to intellectual capital formation. For postsecondary education that means strategic planning, human resource development, capital planning, and program development and review in a coordinated and regionalized manner.

Figure 2

A PLAN OF ACTION FOR THE 1983-85 BIENNIUM



SUMMARY OF RECOMMENDATIONS

Scenario and Role

Recommendation 1a. The Ohio Board of Regents should implement a strategic planning and management process which focuses on economic and industrial development and emphasizes high technology.

Recommendation 1b. The Ohio Board of Regents' strategic planning process should be integrated with other local, regional, and state-wide goal setting projects.

Recommendation 1c. The Ohio Board of Regents' strategic planning process should emphasize technological and occupational forecasting.

Recommendation 1d. The Ohio Board of Regents should develop a mission, role and scope of work statement for technical education in support of the computer literate, high technology, information society.

Human Resource Development

Providers

Recommendation 2a. The Ohio Board of Regents should design and implement a comprehensive program for human resource development.

Recommendation 2b. The Ohio Board of Regents should specify a plan of action to modify the existing Management Information System in order to audit regularly the human resources contained within higher education.

Consumers

Recommendation 2c. The Ohio Board of Regents should develop a mechanism to fund continuing education for economic and industrial development.

Capital Planning

Recommendation 3. The Ohio Board of Regents should request supplemental money to fund high technology equipment and develop a procedure for awarding the additional money to qualifying institutions.

Program Development and Review

Recommendation 4a. In its re-examination of the program development and review process, the Ohio Board of Regents should consider the special characteristics of cost, location, and infrastructure requirements of high technology programs in relation to emerging needs of economic and industrial development.

Recommendation 4b. It is recommended that the unique characteristics of high technology programs be included in discussions on articulation.

Recommendation 4c. The Ohio Board of Regents should promote innovative delivery systems for education and training programs and develop specifications to include electronic delivery of such programs.